

## MATERIAL SAFETY DATA SHEET

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Version 1.22

## Section 1 - Product and Company Information

Product Name	ETHANOL, ANHYDROUS, 200 PROOF, 99.5+%
Product Number	459836
Brand	ALDRICH
Company	Sigma-Aldrich
Address	3050 Spruce Street SAINT LOUIS MO 63103 US
Technical Phone:	800-325-5832
Fax:	800-325-5052
Emergency Phone:	314-776-6555

## Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
ETHYL ALCOHOL, NON-DENATURED, 200 PROOF	64-17-5	No

Formula            C<sub>2</sub>H<sub>6</sub>O  
RTECS Number:    KQ6300000

## Section 3 - Hazards Identification

## EMERGENCY OVERVIEW

Flammable (USA) Highly Flammable (EU). Irritant.  
Irritating to eyes, respiratory system and skin. Highly flammable.  
Target organ(s): Nerves. Liver. Heart.

## HMIS RATING

HEALTH: 2\*  
FLAMMABILITY: 3  
REACTIVITY: 1

## NFPA RATING

HEALTH: 2  
FLAMMABILITY: 3  
REACTIVITY: 1

\*additional chronic hazards present.

For additional information on toxicity, please refer to Section 11.

## Section 4 - First Aid Measures

## ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

## INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

#### DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

#### EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

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### Section 5 - Fire Fighting Measures

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#### FLAMMABLE HAZARDS

Flammable Hazards: Yes

#### EXPLOSION HAZARDS

Vapor may travel considerable distance to source of ignition and flash back. Container explosion may occur under fire conditions.

#### FLASH POINT

57 °F 14 °C Method: closed cup

#### EXPLOSION LIMITS

Lower: 3.3 % Upper: 19 %

#### AUTOIGNITION TEMP

363 °C

#### FLAMMABILITY

N/A

#### EXTINGUISHING MEDIA

Suitable: For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

#### FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Specific Hazard(s): Flammable liquid. Emits toxic fumes under fire conditions.

Specific Method(s) of Fire Fighting: Use water spray to cool fire-exposed containers.

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### Section 6 - Accidental Release Measures

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#### PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area. Shut off all sources of ignition. Use nonsparking tools.

#### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

#### METHODS FOR CLEANING UP

Cover with dry-lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.



Vapor Pressure	44.6 mmHg	20 °C
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
SG/Density	0.79 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	57 °F 14 °C	Method: closed cup
Explosion Limits	Lower: 3.3 % Upper: 19 %	
Flammability	N/A	
Autoignition Temp	363 °C	
Refractive Index	1.362	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water:Complete	

N/A = not available

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## Section 10 - Stability and Reactivity

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### STABILITY

Stable: Stable.

Materials to Avoid: Alkali metals, Ammonia, Oxidizing agents, Peroxides.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Nature of decomposition products not known.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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## Section 11 - Toxicological Information

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### ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: May cause eye irritation.

Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion: May be harmful if swallowed.

### TARGET ORGAN(S) OR SYSTEM(S)

Nerves. Liver. Heart.

### SIGNS AND SYMPTOMS OF EXPOSURE

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Damage to the heart. Narcotic effect. Can cause CNS depression.

### TOXICITY DATA

Inhalation

Rat

20,000 ppm  
LC50  
Oral  
Rat  
7,060 mg/kg  
LD50  
Oral  
Human  
1,400 mg/kg  
LD50

Oral  
Child  
2000 mg/kg  
LDLO  
Remarks: Liver:Fatty liver degeneration. Blood:Other changes.  
Lungs, Thorax, or Respiration:Other changes.

Oral  
Human  
1400 mg/kg  
LDLO  
Remarks: Behavioral:Sleep. Behavioral:Headache.  
Gastrointestinal:Nausea or vomiting.

Subcutaneous  
Infant  
19440 MG/KG  
LDLO  
Remarks: Behavioral:Convulsions or effect on seizure threshold.  
Behavioral:Coma. Nutritional and Gross Metabolic:Changes in:Body  
temperature decrease.

Oral  
Rat  
7060 mg/kg  
LD50  
Remarks: Lungs, Thorax, or Respiration:Other changes.

Inhalation  
Rat  
20,000 ppm  
LC50

Intraperitoneal  
Rat  
3600 UG/KG  
LD50

Intravenous  
Rat  
1440 MG/KG  
LD50  
Remarks: Lungs, Thorax, or Respiration:Dyspnea.

Intraarterial  
Rat  
11 MG/KG  
LD50  
Remarks: Lungs, Thorax, or Respiration:Dyspnea. Lungs, Thorax,  
or Respiration:Chronic pulmonary edema.

Oral  
Mouse  
3450 mg/kg  
LD50

Inhalation  
Mouse  
39,000 mg/m<sup>3</sup>  
LC50

Intraperitoneal  
Mouse  
528 MG/KG  
LD50

Subcutaneous  
Mouse  
8285 MG/KG  
LD50

Intravenous  
Mouse  
1973 MG/KG  
LD50

Oral  
Rabbit  
6300 mg/kg  
LD50

Intraperitoneal  
Rabbit  
963 MG/KG  
LD50

Intravenous  
Rabbit  
2374 MG/KG  
LD50

Oral  
Guinea pig  
5560 mg/kg  
LD50

Intraperitoneal  
Guinea pig  
3414 MG/KG  
LD50

Intraperitoneal  
Hamster  
5068 MG/KG  
LD50

Intraperitoneal  
Mammal  
4300 MG/KG  
LD50

Remarks: Behavioral:Change in motor activity (specific assay).  
Behavioral:Convulsions or effect on seizure threshold.  
Behavioral:Somnolence (general depressed activity).

## IRRITATION DATA

Skin  
Rabbit  
400 mg  
Remarks: Open irritation test

Skin  
Rabbit  
20 mg  
24H  
Remarks: Moderate irritation effect

Eyes  
Rabbit  
500 mg  
Remarks: Severe irritation effect

Eyes  
Rabbit  
500 mg  
24H  
Remarks: Mild irritation effect

Eyes  
Rabbit  
100 mg  
4S  
Remarks: Rinsed

## CHRONIC EXPOSURE - CARCINOGEN

Result: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

Species: Mouse  
Route of Application: Oral  
Dose: 320 MG/KG  
Exposure Time: 50W  
Frequency: I  
Result: Blood:Lymphomas including Hodgkin's disease.  
Liver:Tumors. Tumorigenic:Equivocal tumorigenic agent by RTECS criteria.

Species: Mouse  
Route of Application: Rectal  
Dose: 120 GM/KG  
Exposure Time: 18W  
Frequency: I  
Result: Gastrointestinal:Tumors. Liver:Tumors.  
Tumorigenic:Equivocal tumorigenic agent by RTECS criteria.

Species: Mouse  
Route of Application: Oral  
Dose: 400 GM/KG  
Exposure Time: 57W  
Frequency: I  
Result: Gastrointestinal:Tumors. Tumorigenic:Equivocal tumorigenic agent by RTECS criteria.

## ACGIH CARCINOGEN LIST

Rating: A4

#### CHRONIC EXPOSURE - TERATOGEN

Species: Woman  
Dose: 250 MG/KG  
Route of Application: Oral  
Exposure Time: (37W PREG)  
Result: Effects on Embryo or Fetus: Other effects to embryo.

Species: Rat  
Dose: 4 GM/KG  
Route of Application: Oral  
Exposure Time: (13D PREG)  
Result: Effects on Embryo or Fetus: Cytological changes  
(including somatic cell genetic material).

Species: Rat  
Dose: 12 GM/KG  
Route of Application: Oral  
Exposure Time: (9-12D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death,  
e.g., stunted fetus).

Species: Rat  
Dose: 24 GM/KG  
Route of Application: Oral  
Exposure Time: (14-16D PREG)  
Result: Specific Developmental Abnormalities: Other  
developmental abnormalities. Specific Developmental  
Abnormalities: Central nervous system.

Species: Rat  
Dose: 4 GM/KG  
Route of Application: Oral  
Exposure Time: (6-15D PREG)  
Result: Specific Developmental Abnormalities: Urogenital system.  
Specific Developmental Abnormalities: Eye, ear.

Species: Rat  
Dose: 44 GM/KG  
Route of Application: Oral  
Exposure Time: (7-17D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal  
system. Specific Developmental Abnormalities: Urogenital system.

Species: Rat  
Dose: 20000 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (1-22D PREG)  
Result: Specific Developmental Abnormalities: Other  
developmental abnormalities.

Species: Rat  
Dose: 2240 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (9-12D PREG)  
Result: Effects on Embryo or Fetus: Extra embryonic structures  
(e.g., placenta, umbilical cord).

Species: Rat



Dose: 600 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (8-15D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Rat  
Dose: 600 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (8-15D PREG)  
Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Rat  
Dose: 4 GM/KG  
Route of Application: Intravenous  
Exposure Time: (6-7D PREG)  
Result: Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord). Specific Developmental Abnormalities: Musculoskeletal system. Effects on Embryo or Fetus: Other effects to embryo.

Species: Rat  
Dose: 4 GM/KG  
Route of Application: Intravenous  
Exposure Time: (6-7D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Other developmental abnormalities. Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse  
Dose: 162 GM/KG  
Route of Application: Oral  
Exposure Time: (11-19D PREG)  
Result: Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord).

Species: Mouse  
Dose: 5800 MG/KG  
Route of Application: Oral  
Exposure Time: (7D PREG)  
Result: Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Eye, ear.

Species: Mouse  
Dose: 75600 MG/KG  
Route of Application: Oral  
Exposure Time: (5-11D PREG)  
Result: Specific Developmental Abnormalities: Urogenital system. Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth).

Species: Mouse  
Dose: 5500 MG/KG  
Route of Application: Oral  
Exposure Time: (9D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Mouse  
Dose: 5800 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (10D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse  
Dose: 5800 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (7D PREG)  
Result: Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Eye, ear. Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

Species: Mouse  
Dose: 5622 UG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (10D PREG)  
Result: Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Eye, ear. Effects on Embryo or Fetus: Fetal death.

Species: Mouse  
Dose: 4 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (10D PREG)  
Result: Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material).

Species: Monkey  
Dose: 32400 MG/KG  
Route of Application: Oral  
Exposure Time: (2-19W PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Central nervous system. Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

Species: Monkey  
Dose: 43200 MG/KG  
Route of Application: Oral  
Exposure Time: (1-24W PREG)  
Result: Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord).

Species: Rabbit  
Dose: 15 MG/KG  
Route of Application: Intravenous  
Exposure Time: (15-29D PREG)  
Result: Effects on Embryo or Fetus: Other effects to embryo. Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Species: Guinea pig  
Dose: 240 GM/KG  
Route of Application: Oral  
Exposure Time: (2-61D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities:

Central nervous system.

Species: Guinea pig  
Dose: 72 GM/KG  
Route of Application: Oral  
Exposure Time: (45-62D PREG)  
Result: Specific Developmental Abnormalities: Craniofacial  
(including nose and tongue).

Species: Domestic Animals  
Dose: 94 GM/KG  
Route of Application: Intravenous  
Exposure Time: (14-21W PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death,  
e.g., stunted fetus).

Species: Domestic Animals  
Dose: 40 GM/KG  
Route of Application: Intravenous  
Exposure Time: (14-17W PREG)  
Result: Effects on Newborn: Biochemical and metabolic. Effects  
on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted  
fetus).

Species: Domestic Animals  
Dose: 1 GM/KG  
Route of Application: Intravenous  
Exposure Time: (18W PREG)  
Result: Specific Developmental Abnormalities: Respiratory system.

Species: Mammal  
Dose: 31500 MG/KG  
Route of Application: Oral  
Exposure Time: (15-35D PREG)  
Result: Specific Developmental Abnormalities: Craniofacial  
(including nose and tongue).

#### CHRONIC EXPOSURE - MUTAGEN

Species: Human  
Dose: 220 MMOL/L  
Cell Type: lymphocyte  
Mutation test: DNA inhibition

Species: Human  
Dose: 1160 GM/L  
Cell Type: lymphocyte  
Mutation test: Cytogenetic analysis

Species: Human  
Dose: 12000 PPM  
Cell Type: fibroblast  
Mutation test: Cytogenetic analysis

Species: Human  
Dose: 1 PPH/72H-C  
Cell Type: leukocyte  
Mutation test: Cytogenetic analysis

Species: Human  
Dose: 500 PPM  
Exposure Time: 72H

Cell Type: lymphocyte  
Mutation test: Sister chromatid exchange

Species: Rat  
Route: Oral  
Dose: 4 GM/KG  
Mutation test: DNA damage

Species: Rat  
Route: Intraperitoneal  
Dose: 250 GM/KG  
Exposure Time: 16D  
Mutation test: Other mutation test systems

Species: Rat  
Route: Oral  
Dose: 3 GM/KG  
Mutation test: Other mutation test systems

Species: Rat  
Route: Oral  
Dose: 2 GM/KG  
Mutation test: Cytogenetic analysis

Species: Mouse  
Route: Intraperitoneal  
Dose: 1240 MG/KG  
Exposure Time: 2D  
Mutation test: Micronucleus test

Species: Mouse  
Route: Oral  
Dose: 40 GM/KG  
Mutation test: Cytogenetic analysis

Species: Mouse  
Route: Oral  
Dose: 420 MG/KG  
Exposure Time: 3W  
Mutation test: Sister chromatid exchange

Species: Mouse  
Route: Oral  
Dose: 5 GM/KG  
Mutation test: SLN

Species: Mouse  
Route: Oral  
Dose: 3720 MG/KG  
Exposure Time: 3D  
Mutation test: Dominant lethal test

Species: Mouse  
Route: Oral  
Dose: 1500 MG/KG  
Exposure Time: 50D  
Mutation test: sperm

Species: Hamster  
Dose: 100 PPM  
Cell Type: ovary  
Mutation test: Cytogenetic analysis

Species: Hamster  
Dose: 1 PPH  
Cell Type: Embryo  
Mutation test: Cytogenetic analysis

Species: Hamster  
Dose: 160 MMOL/L  
Cell Type: ovary  
Mutation test: Cytogenetic analysis

Species: Hamster  
Dose: 3900 MG/L  
Cell Type: ovary  
Mutation test: Sister chromatid exchange

Species: Dog  
Dose: 400 UMOL/L  
Cell Type: lymphocyte  
Mutation test: Micronucleus test

#### CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Woman  
Dose: 41 GM/KG  
Route of Application: Oral  
Exposure Time: (41W PREG)  
Result: Effects on Newborn: Drug dependence. Effects on Newborn:  
Other neonatal measures or effects. Effects on Newborn: Apgar  
score (human only).

Species: Woman  
Dose: 8 GM/KG  
Route of Application: Intravenous  
Exposure Time: (32W PREG)  
Result: Effects on Newborn: Apgar score (human only). Effects on  
Newborn: Other neonatal measures or effects.

Species: Woman  
Dose: 200 MG/KG  
Route of Application: Intrauterine  
Exposure Time: (5D PRE)  
Result: Effects on Fertility: Female fertility index (e.g., #  
females pregnant per # sperm positive females; # females  
pregnant per # females mated ).

Species: Rat  
Dose: 78 GM/KG  
Route of Application: Oral  
Exposure Time: (7-19D PREG)  
Result: Effects on Newborn: Biochemical and metabolic.

Species: Rat  
Dose: 322 GM/KG  
Route of Application: Oral  
Exposure Time: (35D MALE)  
Result: Paternal Effects: Spermatogenesis (including genetic  
material, sperm morphology, motility, and count). Paternal  
Effects: Testes, epididymis, sperm duct.

Species: Rat  
Dose: 132 GM/KG

Route of Application: Oral  
Exposure Time: (1-22D PREG)  
Result: Maternal Effects: Parturition. Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Behavioral.

Species: Rat  
Dose: 354 GM/KG  
Route of Application: Oral  
Exposure Time: (10D POST)  
Result: Effects on Newborn: Biochemical and metabolic.

Species: Rat  
Dose: 35295 MG/KG  
Route of Application: Oral  
Exposure Time: (1-15D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated ).

Species: Rat  
Dose: 15 GM/KG  
Route of Application: Intraperitoneal  
Exposure Time: (8-13D PREG)  
Result: Effects on Newborn: Behavioral. Effects on Newborn: Physical.

Species: Rat  
Dose: 600 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (8-15D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord). Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Rat  
Dose: 3 GM/KG  
Route of Application: Intravenous  
Exposure Time: (6-7D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Rat  
Dose: 5 MG/KG  
Route of Application: Intracerebral  
Exposure Time: (1D PRE)  
Result: Effects on Fertility: Other measures of fertility

Species: Rat  
Dose: 60 GM/KG  
Route of Application: Unreported  
Exposure Time: (9-14D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Embryo or Fetus: Fetal death.

Species: Rat  
Dose: 400 MG/KG  
Route of Application: Intratesticular  
Exposure Time: (1D MALE)  
Result: Effects on Fertility: Male fertility index (e.g., # males impregnating females per # males exposed to fertile nonpregnant females).

Species: Rat  
Dose: 2400 MG/KG  
Route of Application: Intrauterine  
Exposure Time: (10D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Rat  
Dose: 642 GM/KG  
Route of Application: Multiple  
Exposure Time: (1-21D PREG/23D POST)  
Result: Effects on Newborn: Weaning or lactation index (e.g., # alive at weaning per # alive at day 4). Maternal Effects: Parturition. Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Species: Rat  
Dose: 373 GM/KG  
Route of Application: Multiple  
Exposure Time: (23D POST)  
Result: Effects on Newborn: Behavioral. Effects on Newborn: Physical.

Species: Mouse  
Dose: 21 GM/KG  
Route of Application: Oral  
Exposure Time: (1-21D PREG)  
Result: Effects on Newborn: Biochemical and metabolic. Effects on Newborn: Behavioral.

Species: Mouse  
Dose: 1680 GM/KG  
Route of Application: Oral  
Exposure Time: (70D MALE)  
Result: Paternal Effects: Spermatogenesis (including genetic material, sperm morphology, motility, and count).

Species: Mouse  
Dose: 4300 MG/KG  
Route of Application: Intraperitoneal  
Exposure Time: (10D PREG)  
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Species: Dog  
Dose: 21600 MG/KG  
Route of Application: Oral  
Exposure Time: (1-60D PREG)  
Result: Effects on Newborn: Stillbirth. Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Species: Dog

Dose: 260 GM/KG  
Route of Application: Oral  
Exposure Time: (1-62D PREG)  
Result: Effects on Newborn: Viability index (e.g., # alive at day 4 per # born alive).

Species: Dog  
Dose: 221 GM/KG  
Route of Application: Oral  
Exposure Time: (1-47D PREG)  
Result: Effects on Fertility: Abortion.

Species: Dog  
Dose: 100 MG/KG  
Route of Application: Intratesticular  
Exposure Time: (1D MALE)  
Result: Paternal Effects: Testes, epididymis, sperm duct.

Species: Monkey  
Dose: 78 GM/KG  
Route of Application: Oral  
Exposure Time: (4-23W PREG)  
Result: Effects on Fertility: Abortion.

Species: Monkey  
Dose: 400 MG/KG  
Route of Application: Oral  
Exposure Time: (2-21W PREG)  
Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain).

Species: Monkey  
Dose: 206 GM/KG  
Route of Application: Oral  
Exposure Time: (90D PRE)  
Result: Maternal Effects: Menstrual cycle changes or disorders.

Species: Rabbit  
Dose: 3945 MG/KG  
Route of Application: Oral  
Exposure Time: (1D PRE)  
Result: Effects on Fertility: Female fertility index (e.g., # females pregnant per # sperm positive females; # females pregnant per # females mated ).

Species: Rabbit  
Dose: 3750 MG/KG  
Route of Application: Oral  
Exposure Time: (1D PRE)  
Result: Effects on Fertility: Other measures of fertility

Species: Pig  
Dose: 2648 GM/KG  
Route of Application: Oral  
Exposure Time: (78W PRE/1-16W PREG)  
Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Live birth index (# fetuses per litter; measured after birth).

Species: Guinea pig  
Dose: 90 GM/KG  
Route of Application: Oral



Exposure Time: (1-68D PREG)  
Result: Effects on Newborn: Growth statistics (e.g., reduced weight gain). Effects on Newborn: Behavioral.

Species: Guinea pig  
Dose: 264 GM/KG  
Route of Application: Oral  
Exposure Time: (2-67D PREG)  
Result: Effects on Newborn: Biochemical and metabolic. Effects on Newborn: Physical. Effects on Newborn: Growth statistics (e.g., reduced weight gain).

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## Section 12 - Ecological Information

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### ACUTE ECOTOXICITY TESTS

Test Type: LC50 Fish  
Species: Onchorhynchus mykiss (Rainbow trout)  
Time: 96 h  
Value: 13,000 mg/l

Test Type: EC50 Daphnia  
Species: Daphnia magna  
Time: 48 h  
Value: 9.3 mg/l

Test Type: LC50 Fish  
Species: Onchorhynchus mykiss (Rainbow trout)  
Time: 96 h  
Value: 10,400 mg/l

Test Type: LC50 Fish  
Species: Pimephales promelas (Fathead minnow)  
Time: 96 h  
Value: 15,300 mg/l

Test Type: LC50 Fish  
Species: other fish  
Time: 24 h  
Value: 10,000 mg/l

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## Section 13 - Disposal Considerations

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### APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

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## Section 14 - Transport Information

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### DOT

Proper Shipping Name: Ethanol [or] Ethyl alcohol [or]  
Ethanol solutions [or] Ethyl alcohol solutions  
UN#: 1170  
Class: 3  
Packing Group: Packing Group II  
Hazard Label: Flammable liquid  
PIH: Not PIH

### IATA

Proper Shipping Name: Ethanol  
IATA UN Number: 1170  
Hazard Class: 3  
Packing Group: II

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## Section 15 - Regulatory Information

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### EU DIRECTIVES CLASSIFICATION

Symbol of Danger: F  
Indication of Danger: Highly Flammable.  
R: 11  
Risk Statements: Highly flammable.  
S: 7-16  
Safety Statements: Keep container tightly closed. Keep away from sources of ignition - no smoking.

### US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Flammable (USA) Highly Flammable (EU).  
Irritant.  
Risk Statements: Irritating to eyes, respiratory system and skin. Highly flammable.  
Safety Statements: Keep container tightly closed. Keep away from sources of ignition - no smoking. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
US Statements: Target organ(s): Nerves. Liver. Heart.

### UNITED STATES REGULATORY INFORMATION

SARA LISTED: No  
TSCA INVENTORY ITEM: Yes

### CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.  
DSL: Yes  
NDSL: No

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## Section 16 - Other Information

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### DISCLAIMER

For Industrial Use Only; Not for Beverage Consumption

### WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2006 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.